

FIG. 1A

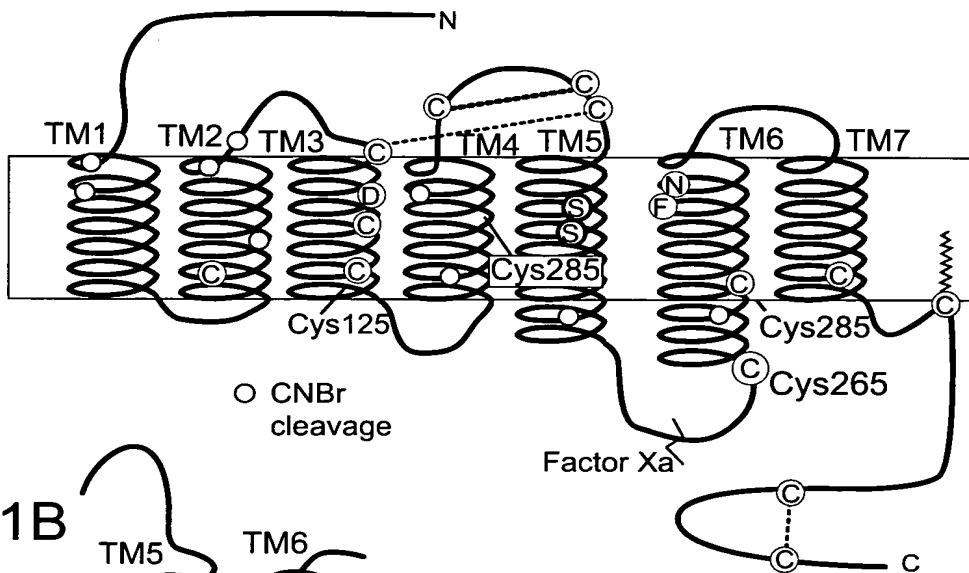
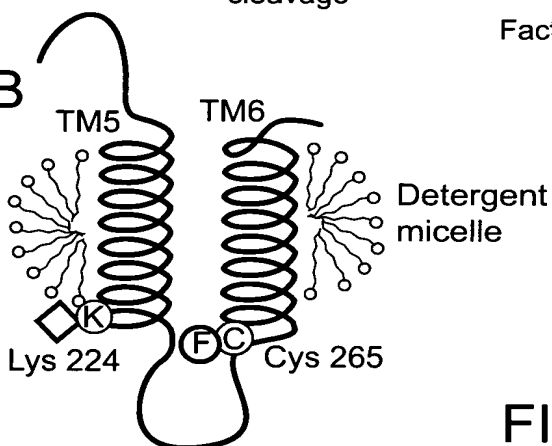
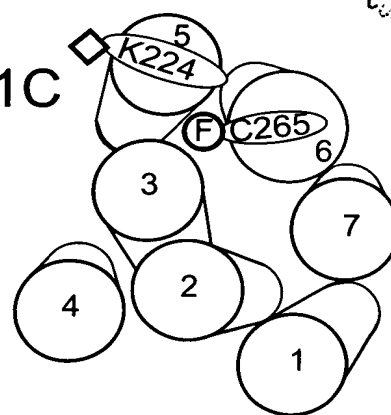


FIG. 1B



(F) FLUORESCCEIN
 MALEIMIDE
 ◇ OXYL-NHS
 (quencher)

FIG. 1C



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FIG. 2A

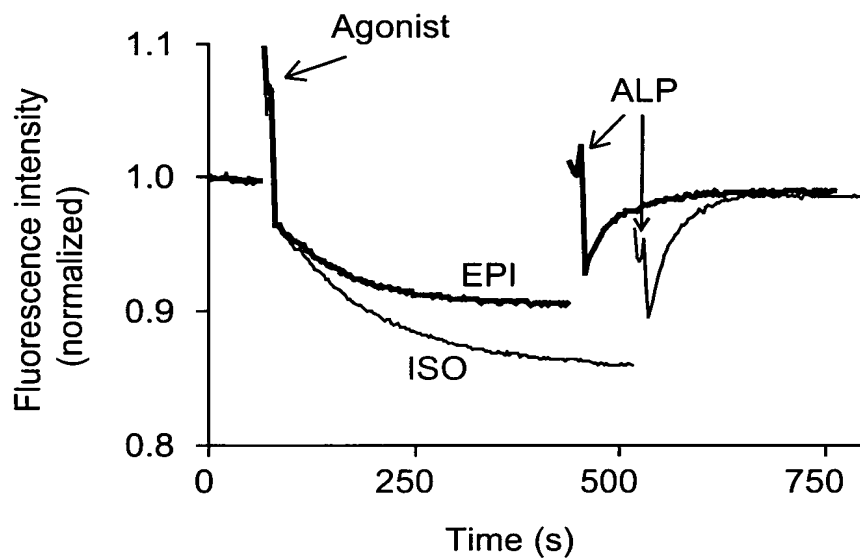
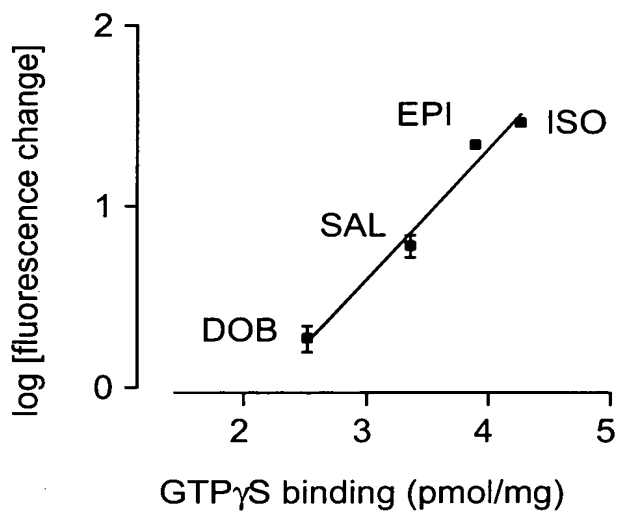


FIG. 2B



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FIG. 3A

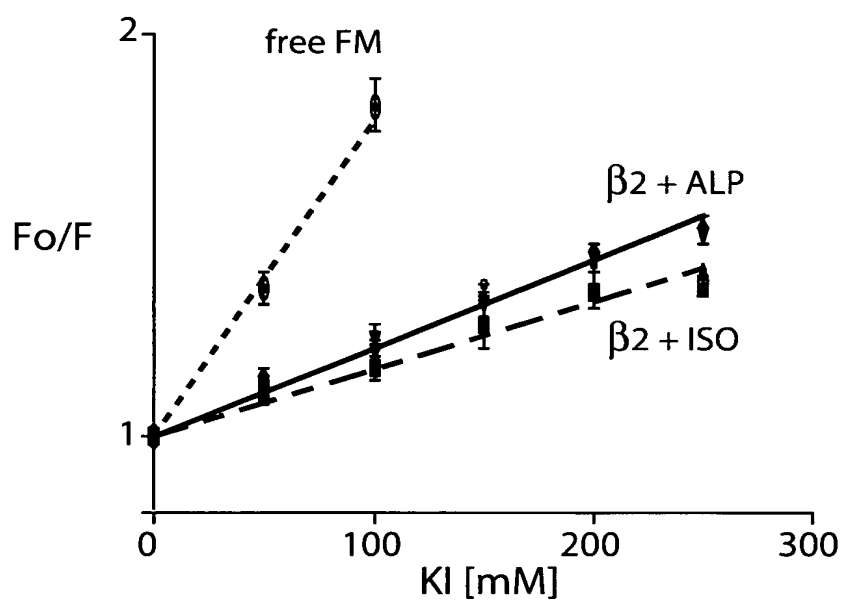
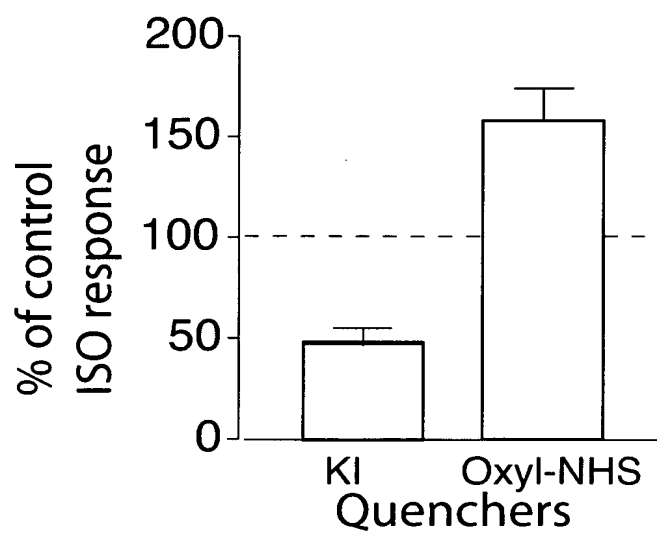


FIG. 3B



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FIG. 4A

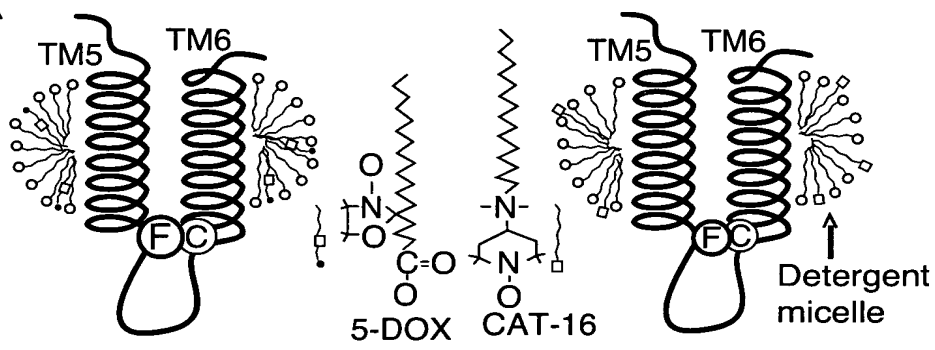


FIG. 4B

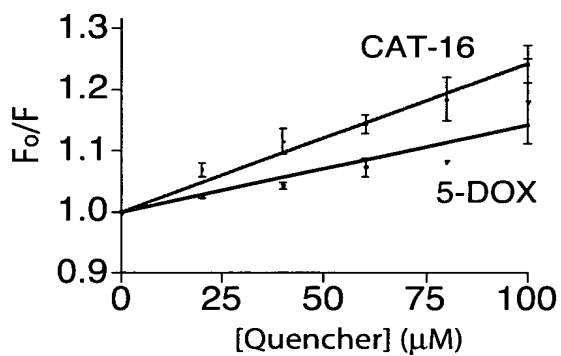


FIG. 4C

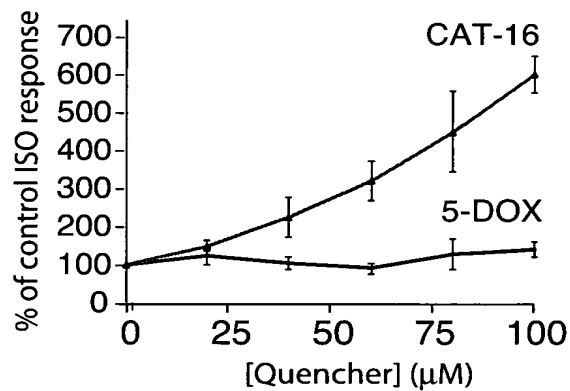
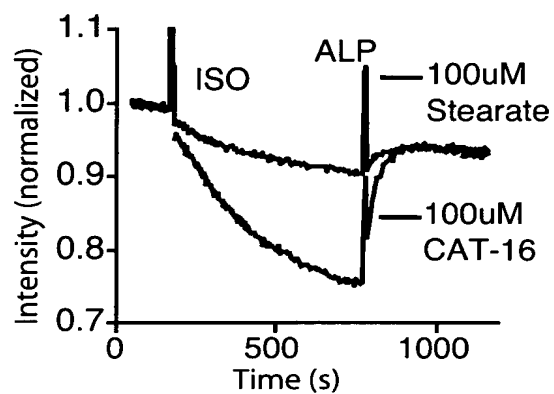


FIG. 4D



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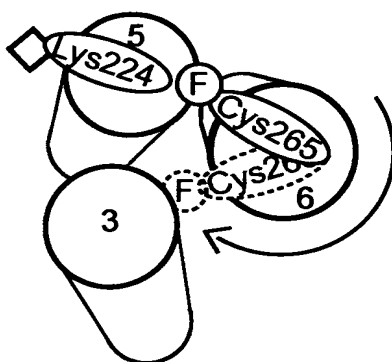


FIG. 5A

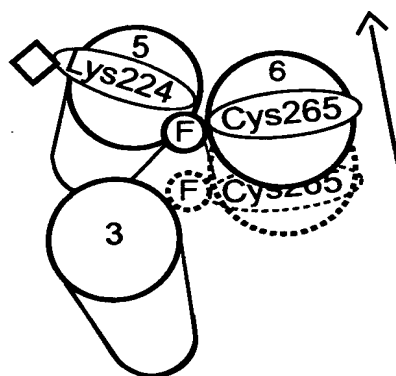
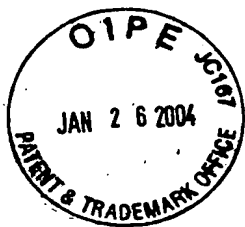


FIG. 5B

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FIG. 6A

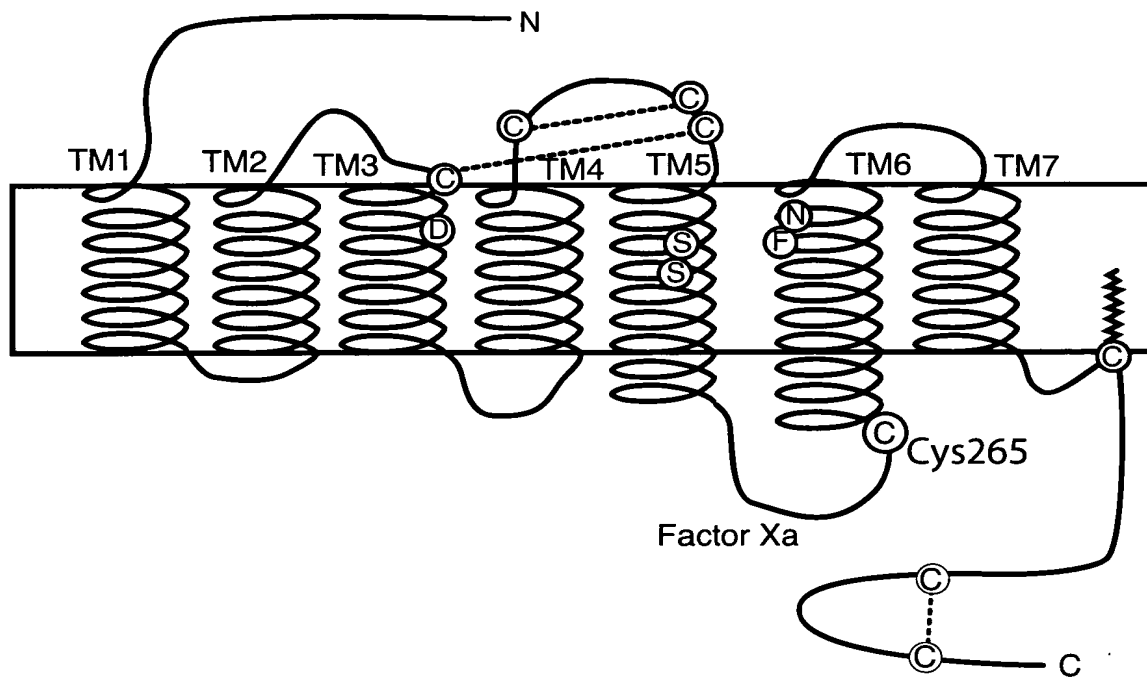
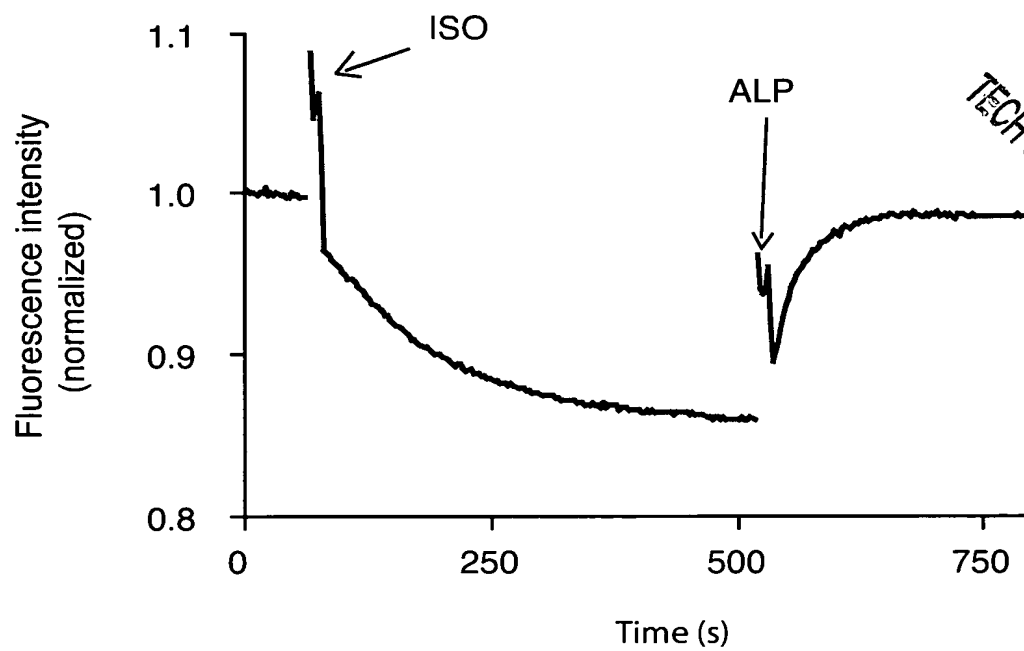
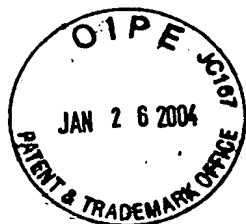


FIG. 6B

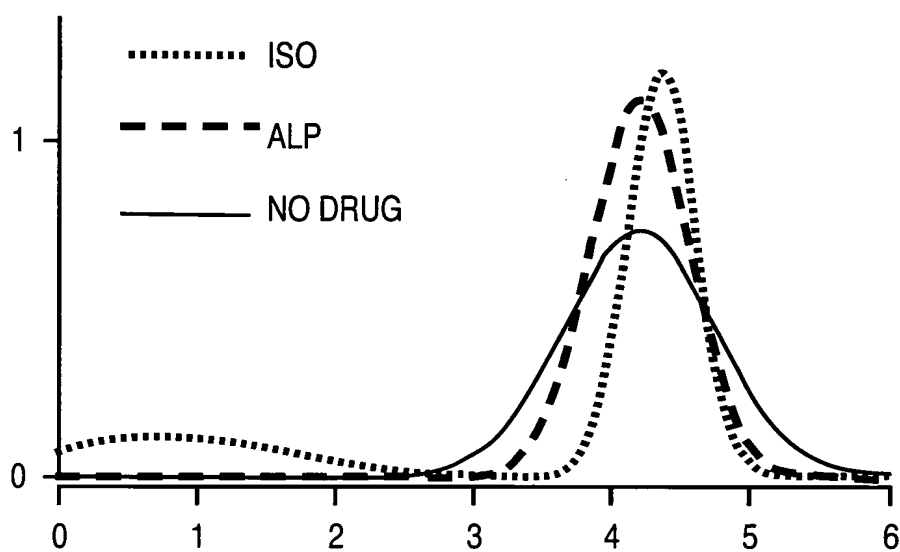


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FIG. 7



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FIG. 8A

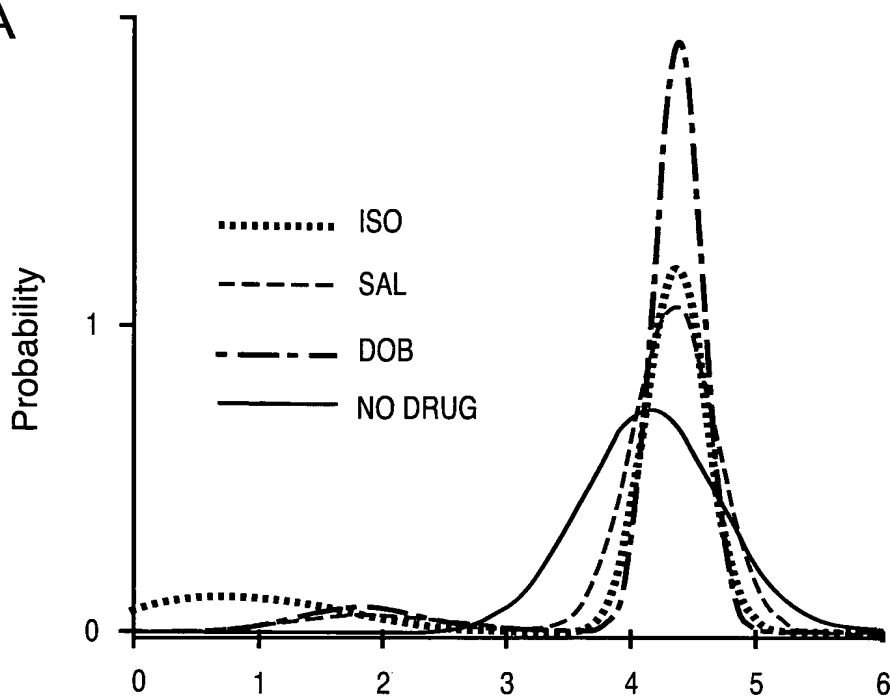
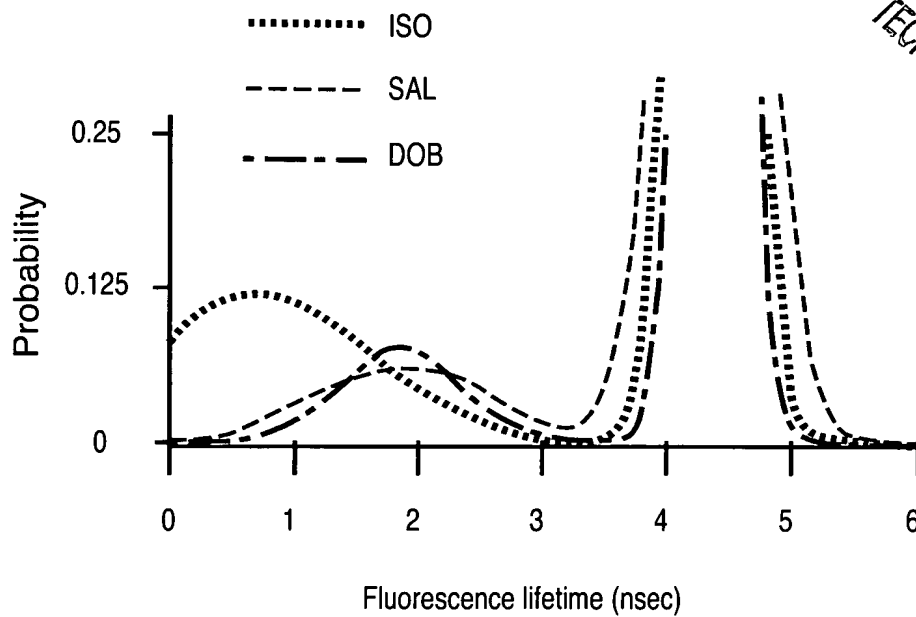


FIG. 8B



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FIG. 9A

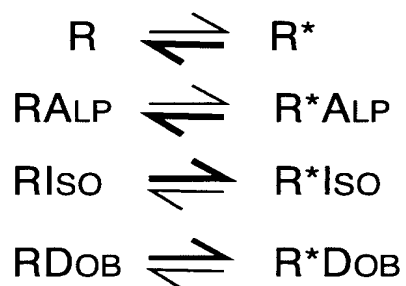
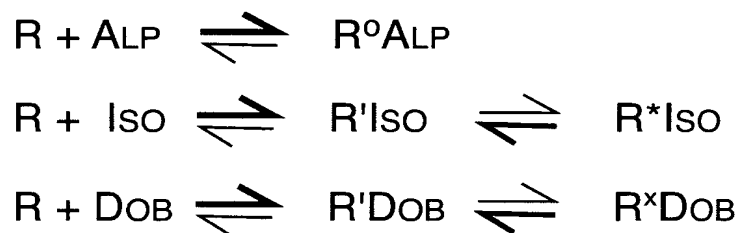


FIG. 9B



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FIG. 10A

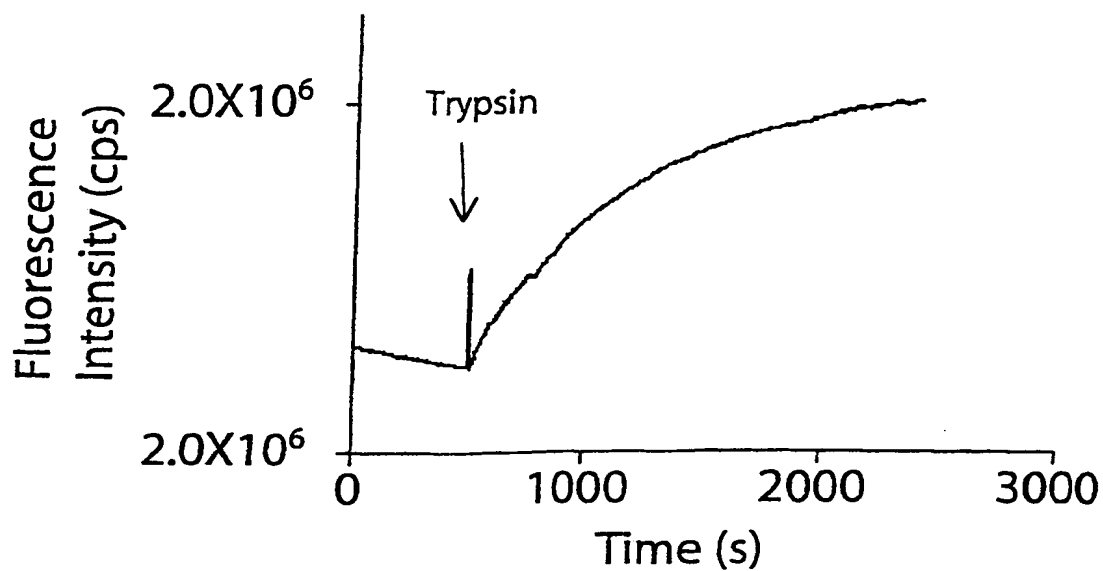
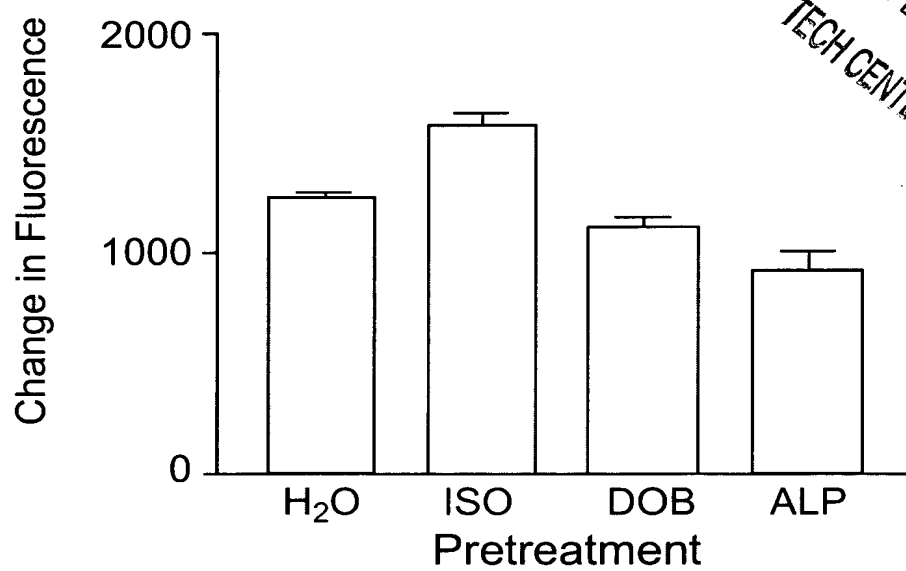


FIG. 10B

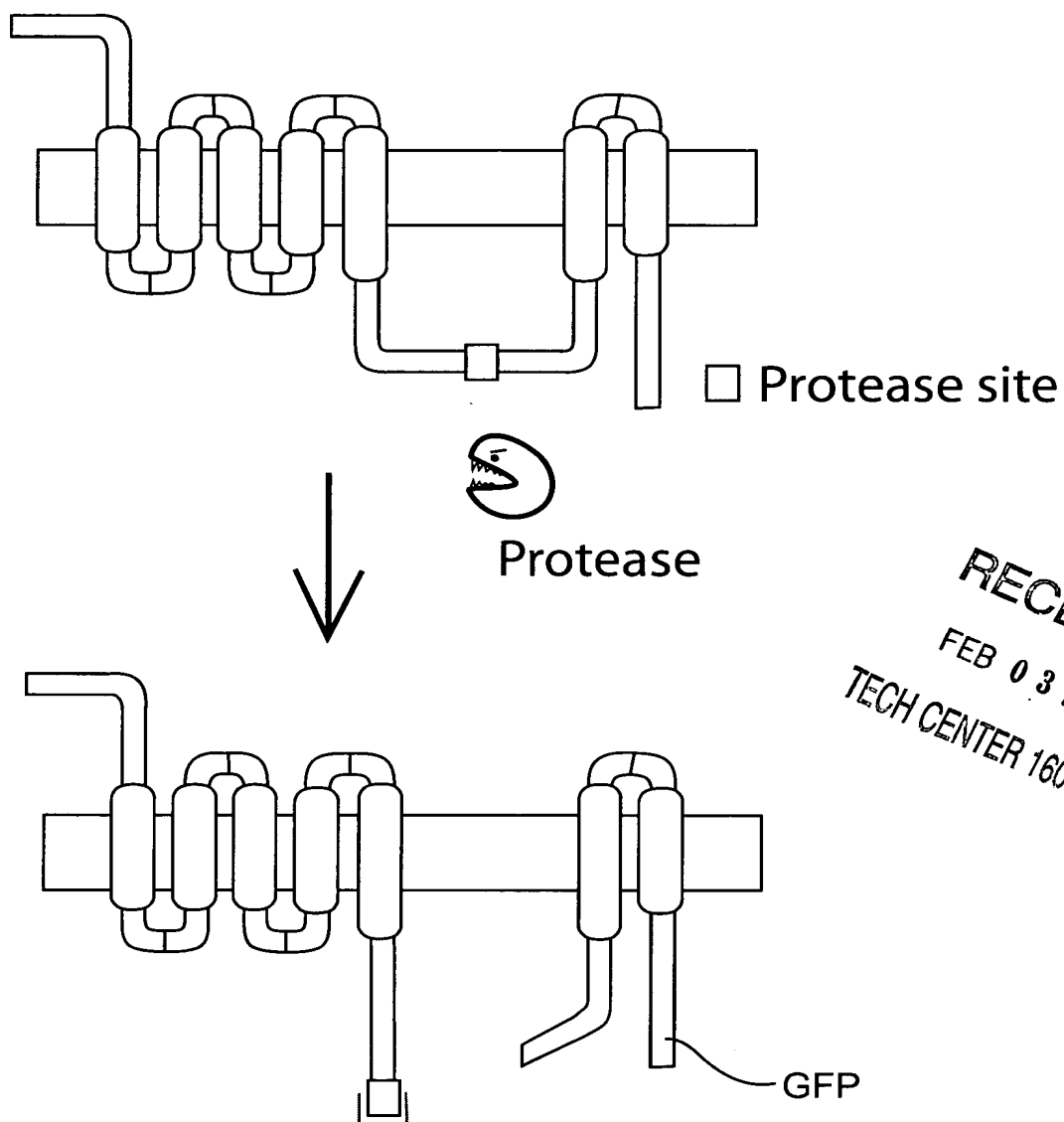


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FIG. 11



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FIG. 13
 β_2 Adrenergic Receptor DNA and Protein sequence

ATG	GGG	CAA	CCC	GGG	AAC	GGC	AGC	GCC	TTC	TTG	CTG	GCA	CCC	AAT	AGA	AGC	CAT	GCG	CCG	GAC
M	G	Q	P	G	N	G	S	A	F	L	L	A	P	N	R	S	H	A	P	D
CAC	GAC	GTC	ACG	CAG	CAA	AGG	GAC	GAG	GTG	TGG	GTG	GTG	GGC	ATG	GGC	ATC	GTG	ATG	TCT	CTC
H	D	V	T	Q	Q	R	D	E	V	W	V	V	G	M	G	I	V	M	S	L
ATC	GTC	CTG	GCC	ATC	GTG	TTT	GGC	AAT	GTG	CTG	GTC	ATC	ACA	GCC	ATT	GCC	AAG	TTC	GAG	CGT
I	V	L	A	I	V	F	G	N	V	L	V	I	T	A	I	A	K	F	E	R
CTG	CAG	ACG	GTC	ACC	AAC	TAC	TTC	ATC	ACT	TCA	CTG	GCC	TGT	GCT	GAT	CTG	GTG	ATG	GGC	CTG
L	Q	T	V	T	N	Y	F	I	T	S	L	A	C	A	D	L	V	M	G	L
GCA	GTG	GTG	CCC	TTT	GGG	GCC	GCC	CAT	ATT	CTT	ATG	AAA	ATG	TGG	ACT	TTT	GGC	AAC	TTC	TGG
A	V	V	P	F	G	A	A	H	I	L	M	K	M	W	T	F	G	N	F	W
TGC	GAG	TTT	TGG	ACT	TCC	ATT	GAT	GTG	CTG	TGC	GTG	ACG	GCT	AGC	ATT	GAG	ACC	CTG	TGC	GTG
C	E	F	W	T	S	I	D	V	L	C	V	T	A	S	I	E	T	L	C	V
ATC	GCA	GTG	GAT	CGC	TAC	TTT	GCC	ATT	ACT	TCA	CCT	TTC	AAG	TAC	CAG	AGC	CTG	CTG	ACC	AAG
I	A	V	D	R	Y	F	A	I	T	S	P	GTG	K	Y	Q	S	L	L	T	K
AAT	AAG	GCC	CGG	GTG	ATC	ATT	CTG	ATG	GTG	TGG	ATT	GTG	TCA	GGC	CTT	ACC	TCC	TTC	TTG	CCC
N	K	A	R	V	I	I	L	M	V	W	I	V	S	G	L	T	S	F	L	P
AAT	CAG	ATG	CAC	TGG	TAC	CGG	GCC	ACC	CAC	CAG	GAA	GCC	ATC	AAC	TGC	TAT	GCC	AAT	GAG	ACC
I	Q	M	H	W	Y	R	A	T	H	Q	E	A	I	N	C	Y	A	N	E	T
TGC	TGT	GAC	TTC	TTC	ACG	AAC	CAA	GCC	TAT	GCC	ATT	GCC	TCT	TCC	ATC	GTG	TCC	TTC	TAC	GTG
C	C	D	F	F	T	N	Q	A	Y	A	I	A	S	S	I	V	S	F	Y	V
CCC	CTG	GTG	ATC	ATG	GTC	TTC	GTG	TAC	TCC	AGG	GTC	TTT	CAG	GAG	GCC	AAA	AGG	CAG	CTC	CAG
P	L	V	I	M	V	F	V	Y	S	R	V	F	Q	E	A	K	R	Q	L	Q
AAG	ATT	GAC	AAA	TCT	GAG	GGC	CGC	TTC	CAT	GTC	CAG	AAC	CTT	AGC	CAG	GTG	GAG	CAG	GAT	GGG
K	I	D	K	S	E	G	R	F	H	V	Q	N	L	S	Q	V	E	Q	D	G
CGG	ACG	GGG	CAT	GGA	CTC	CGC	AGA	TCT	TCC	AAG	TTC	TGC	TTG	AAG	GAG	CAC	AAA	GCC	CTC	AAG
R	T	G	H	G	L	R	R	S	S	K	F	C	L	K	E	H	K	A	L	K
ACG	TTA	GGC	ATC	ATG	ATG	GGC	ACT	TTC	ACC	CTC	TGC	TGG	CTG	CCC	TTC	TTC	ATC	GTT	AAC	ATT
T	L	G	I	I	M	G	T	F	T	L	C	W	L	P	F	F	I	V	N	I
GTG	CAT	GTG	ATC	CAG	GAT	AAC	CTC	ATC	CGT	AAG	GAA	GTT	TAC	ATC	CTC	CTA	AAT	TGG	ATA	GGC
V	H	V	I	Q	D	N	L	I	R	K	E	V	Y	I	L	L	N	W	I	G
TAT	GTC	AAT	TCT	GGT	TTT	AAT	CCC	CTT	ATC	TAC	TGC	CGG	AGC	CCA	GAT	TTC	AGG	ATT	GCC	TTC
Y	V	N	S	G	F	N	P	L	I	Y	C	R	S	P	D	F	R	I	A	F
CAG	GAG	CTC	TGC	CTG	CTG	CGC	AGG	TCT	TCT	TTG	AAG	GCC	TAT	GGG	AAT					

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FIG. 14
 β_2 Adrenergic Receptor with TEV site in 2nd intracellular loop

ATG	GGG	CAA	CCC	GGG	AAC	GGC	AGC	GGC	TTC	TTG	CTG	GCA	CCC	AAT	AGA	AGC	CAT	GGC	CCG	GAC
M	G	Q	P	G	N	G	S	A	F	L	L	A	P	N	R	S	H	A	P	D
CAC	GAC	GTC	ACG	CAG	CAA	AGG	GAC	GAG	GTG	TGG	GTG	GTG	GGC	ATG	GGC	ATC	GTC	ATG	TCT	CTC
H	D	V	T	Q	Q	R	D	E	V	W	V	V	G	M	G	I	V	M	S	L
ATC	GTC	CTG	GCC	ATC	GTG	TTT	GGC	AAT	GTG	CTG	GTG	ATC	ACA	GCC	ATT	GCC	AAG	TTT	GAG	CTG
I	V	L	A	I	V	F	G	N	V	L	V	I	T	A	I	A	K	F	E	R
CTG	CAG	ACG	GTC	ACC	AAC	TAC	TTT	ATC	ACT	TCA	CTG	GCC	TGT	GCT	GAT	CTG	GTC	ATG	GAG	CTG
L	Q	T	V	T	N	Y	F	I	T	S	L	A	C	A	D	L	V	M	G	L
GGCA	GTG	GTG	CCC	TTT	GGG	GCC	GCC	CAT	ATT	CTT	ATG	AAA	ATG	TGG	ACT	TTT	GGC	AAC	TTT	TGG
A	V	V	P	F	G	A	A	H	I	L	M	K	M	W	T	F	G	N	F	W
TGC	GAG	TTT	TGG	ACT	TCC	ATT	GAT	GTG	CTG	TGC	GTG	ACG	GCT	AGC	ATT	GAG	ACC	CTG	TGC	GTG
C	E	F	W	T	S	I	D	V	L	C	V	T	A	S	I	E	T	L	C	V
ATC	GCA	GTG	GAT	CGC	TAC	TTT	GCC	ATT	ACT	TCA	CCT	TTT	AAG	GAG	AAT	CTC	TAC	TTT	CAG	GGC
I	A	V	D	R	Y	F	A	I	T	S	P	F	K	E	N	L	Y	F	Q	G
CTG	CTG	ACC	AAG	AAT	AAG	GCC	CGG	GTG	ATC	ATT	CTG	ATG	GTG	TGG	ATT	GTG	TCA	GGC	CTT	ACC
L	LT	T	K	N	K	A	R	V	I	CGG	L	M	V	W	I	V	S	G	L	T
TTC	TTC	TTG	CCC	ATT	CAG	ATG	CAC	TGG	TAC	CGG	GCC	ACC	CAC	CAG	GAA	GCC	ATC	AAC	TGC	TAT
F	F	L	P	I	Q	M	H	W	Y	R	A	T	H	Q	E	A	I	N	C	Y
GC	AT	GAG	ACC	TGC	TGT	GAC	TTC	TTC	ACG	AAC	CAA	GCC	TAT	GCC	ATT	GCC	TCT	TCC	ATC	GTG
A	N	E	T	C	C	D	F	F	T	N	Q	A	Y	A	I	A	S	S	I	V
TTC	TTC	TAC	GTT	CCC	CTG	GTG	ATC	ATG	GTG	TTT	GTG	TAC	TCC	AGG	GTG	TTT	CAG	GAG	GCC	AAA
S	F	Y	V	P	L	V	I	M	V	F	V	Y	S	R	V	F	Q	E	A	K
AGG	CAG	CTC	CAG	AAG	ATT	GAC	AAA	TCT	GAG	GGC	CGC	TTC	CAT	GTG	CAG	AAC	CTT	AGC	CAG	GTG
R	Q	L	Q	R	I	D	K	S	E	G	R	F	H	AAG	TTT	TGC	TTG	AAG	GAG	CAC
E	Q	D	G	G	T	G	H	G	L	CGC	AGA	TCT	TCC	K	F	C	L	K	E	H
AAA	GCC	CTC	AAG	ACG	TTA	GGC	ATC	ATC	ATG	GGC	ACT	ATC	ACC	CTC	TGC	TTG	CTG	CCC	TTT	CTC
K	A	L	K	T	L	G	I	I	M	G	T	F	T	L	C	W	Y	P	F	F
ATC	GTT	AAC	ATT	GTG	CAT	GTG	ATC	CAG	GAT	AAC	CTC	ATC	CGT	AAG	GAA	GTT	TAC	ATC	CTC	CTA
I	V	N	I	V	H	V	I	Q	D	N	L	I	R	K	E	V	Y	I	L	L
AAAT	TGG	ATA	GGC	TAT	GTG	AAT	TCT	GGT	TTT	AAAT	CCC	CTT	ATC	TAC	TGC	CGG	AGC	CCA	GAT	TTC
N	W	I	G	Y	V	N	S	G	F	N	P	L	I	Y	C	R	S	P	D	F
AGG	ATT	GCC	TTC	CAG	GAG	CTC	CTG	TGC	CTG	CGC	AGG	TCT	TCT	TTG	AAG	GCC	TAT	GGG	AAT	GGC
R	I	A	F	Q	E	L	L	C	L	R	S	S	S							



Modifications to the μ opioid receptor to add TEV protease sites

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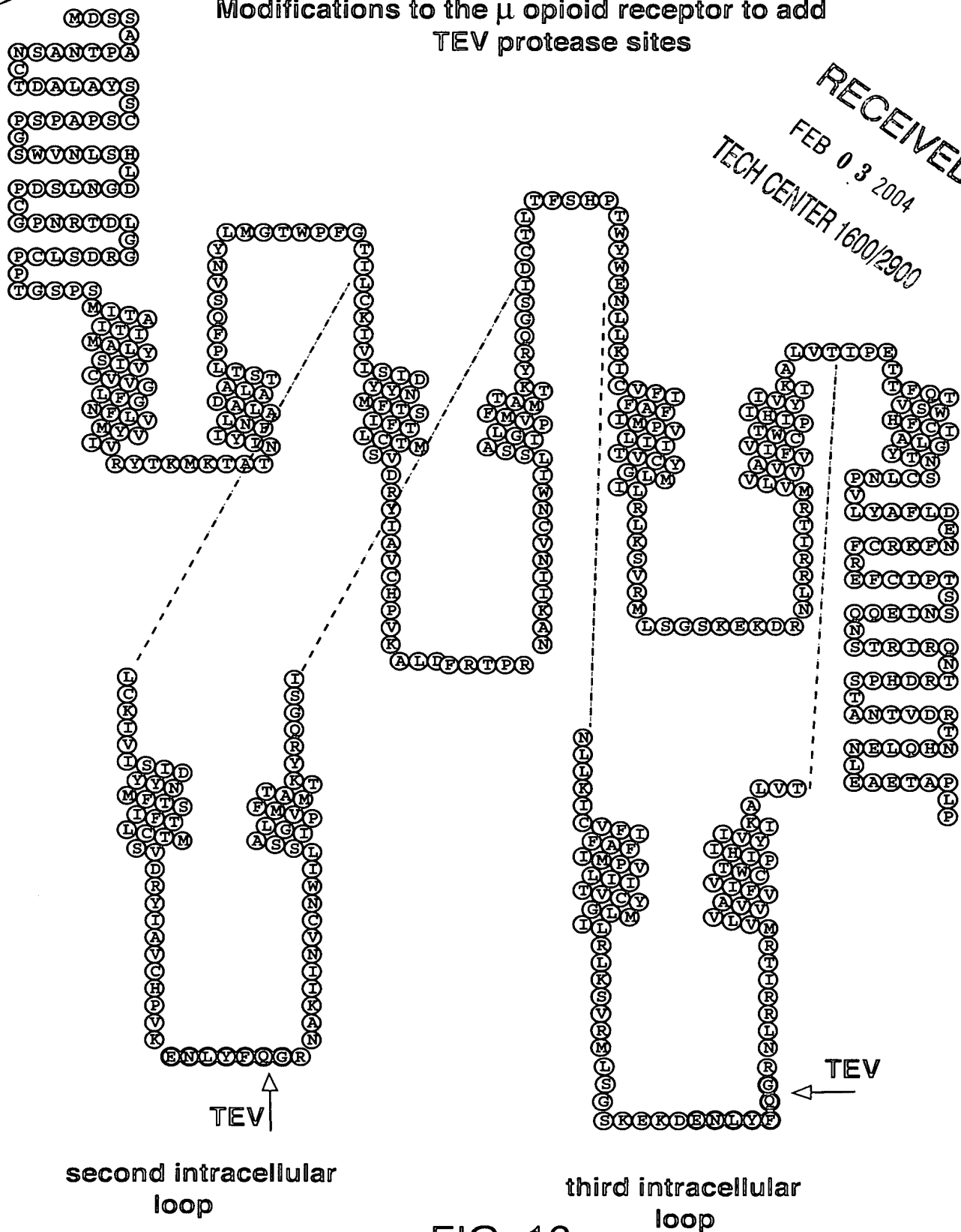


FIG. 16

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μ Opioid receptor DNA and Protein sequence

AATG	GAC	AGC	AGC	GCT	GCC	CCC	ACG	AAC	GCC	AGC	AAT	TGC	ACT	GAT	GCC	TTG	GCG	TAC	TCA	AGT
ATM	TGC	CCA	GCA	CCC	AGC	CCC	GGT	TCC	TGG	GTC	AAC	TTG	TCC	CAC	TTA	GAT	GGC	GAC	CTG	TCC
C	S	P	A	P	S	P	G	S	W	V	N	L	S	H	L	D	G	D	L	S
GAC	CCA	TGC	GGT	CCG	AAC	CGC	ACC	GAC	CTG	GGC	GGG	AGA	GAC	AGC	CTG	TGC	CCT	CCA	ACC	GGC
D	P	C	G	P	N	R	T	D	L	G	G	R	D	S	L	C	P	P	T	GGC
D	P	C	G	P	N	R	T	D	L	G	G	R	D	S	L	C	P	P	T	GGC
AGT	CCC	TCC	ATG	ATC	ACG	GCC	ATC	ACG	ATC	ATG	GCC	CTC	TAC	TCC	ATC	GTG	GTG	GTG	GTG	GGG
S	P	S	M	I	T	A	I	T	I	M	A	L	Y	S	I	V	C	V	V	G
CTC	TTC	GGA	AAC	TTC	CTG	GTC	ATG	TAT	GTG	ATT	GTC	AGA	TAC	ACC	AAG	ATG	AAG	ACT	GCC	ACC
L	F	G	N	F	L	V	M	Y	V	I	V	R	Y	T	K	M	K	T	A	TAT
AAC	ATC	TAC	ATT	TTC	AAC	CTT	GCT	CTG	GCA	GAT	GCC	TTA	GCC	ACC	AGT	ACC	CTG	CCC	TTC	CAG
N	I	Y	I	F	N	L	A	L	A	D	A	L	A	T	S	T	L	P	F	Q
AGT	GTG	AAT	TAC	CTA	ATG	GGA	ACA	TGG	CCA	TTT	GGA	ACC	ATC	CTT	TGC	AAG	ATA	GTG	ATC	TCC
S	V	N	Y	L	M	G	T	W	P	F	G	T	I	L	C	K	I	V	I	S
ATA	GAT	TAC	TAT	AAC	ATG	TTC	ACC	AGC	ATA	TTC	ACC	CTC	TGC	ACC	ATG	AGT	GTG	GAT	CGA	TAC
I	D	Y	Y	N	M	F	T	S	I	F	T	L	C	T	M	S	V	D	R	Y
ATT	GCA	GTC	TGC	CAC	CCT	GTC	AAG	GCC	TTA	GAT	TTC	CGT	ACT	CCC	CGA	AAT	GCC	AAA	ATT	ATC
I	A	V	C	H	P	V	K	A	L	D	F	R	T	P	R	N	A	K	I	I
AAAT	GTC	TGC	AAC	TGG	ATC	CTC	TCT	TCA	GCC	ATT	GGT	CTT	CCT	GTA	ATG	TTC	ATA	GCT	ACA	ACA
N	V	C	N	W	I	L	S	S	A	I	G	L	P	V	M	F	I	A	T	T
AAA	TAC	AGG	CAA	GGT	TCC	ATA	GAT	TGT	ACA	CTA	ACA	TTC	TCT	CAT	CCA	ACC	TGG	TAC	TGG	GAA
K	Y	R	Q	G	S	I	D	C	T	L	T	F	S	H	P	T	W	Y	W	E
AC	CTG	CTG	AAG	ATC	TGT	GTT	TTC	ATC	TTC	GCC	TTC	ATT	ATG	CCA	GTG	CTC	ATC	ATT	ACC	GTG
N	L	L	K	I	C	V	F	I	F	A	F	I	M	P	V	L	I	I	T	V
TGC	TAT	GGA	CTG	ATG	ATC	TTG	CGC	CTC	AAG	AGT	GTC	CGC	ATG	CTC	TCT	GGC	TCC	AAA	GAA	AAG
C	Y	G	L	M	I	L	R	L	K	S	V	R	M	L	S	G	S	K	E	K
GAC	AGG	AAT	CTT	CGA	AGG	ATC	ACC	AGG	ATG	GTG	CTG	GTG	GTG	GTG	GCT	GTG	TTC	ATC	GTG	TGC
D	R	N	L	R	I	I	T	R	M	V	L	V	V	V	A	V	F	I	V	C
TTG	ACT	CCC	ATT	CAC	ATT	TAC	GTG	ATC	ATT	AAA	GCC	TTG	GTT	ACA	ATC	CCA	GAA	ACT	ACG	TTT
W	T	P	I	H	I	Y	V	I	K	A	A	L	V	T	I	P	E	T	T	C
CAG	ACT	GTT	TCT	TGG	CAC	TTT	TGC	ATT	GCT	CTA	GGT	TAC	ACA	AAC	AGC	TGC	CTC	AAC	CCA	GTC
Q	T	V	S	W	H	F	C	I	A	L	G	Y	T	N	S	C	L	N	P	V
CTT	TAT	GCA	TTT	CTG	GAT	GAA	AAC	TTC	AAA	CGA	TGC	TTC	AGA	GAG	TTC	TGT	ATC			

FIG. 17



AATG	GAC	AGC	AGC	AGC	CCC	ACG	AAC	GCC	AGC	AAT	TGC	ACT	GAT	GCC	TTG	GCG	TAC	TCA	AGT
M	D	S	S	S	A	S	N	A	S	N	C	T	D	A	L	A	Y	S	S
TGC	TCC	CCA	GCA	CCC	CCC	GGT	TCC	TGG	GTC	AAC	TTG	TCC	CAC	TTA	GAT	GGC	GAC	CTG	TCC
C	S	P	A	P	S	G	S	W	V	N	L	S	H	L	D	G	D	L	S
GAC	CCA	TGC	GGT	CGG	AAC	CGC	GAC	CTG	GGC	GGG	AGA	GAC	AGC	CTG	TGC	CCT	CCA	ACC	GGC
D	P	C	G	P	N	R	D	L	G	G	R	D	S	L	C	P	P	T	GGC
MAGT	CCC	TCC	ATG	ATC	GCC	ATC	ACG	ATC	ATG	GCC	CTC	TAC	TCC	ATC	TGC	GTG	GTG	GGG	G
S	P	S	M	I	A	I	T	I	M	A	L	Y	S	I	V	C	V	V	G
CTC	TTC	GGA	AAC	TTC	CTG	CTG	TAT	GTG	ATT	GTC	AGA	TAC	ACC	AAG	ATG	AAG	ACT	GCC	ACC
L	F	G	N	F	L	V	Y	V	I	V	R	Y	T	K	M	K	T	A	T
AN	ATC	TAC	ATT	TTC	AAC	CTT	CTG	GCA	GAT	GCC	TTA	GCC	ACC	AGT	ACC	CTG	CCC	TTC	CAG
MAGT	GTG	AAT	TAC	CTA	ATG	GGA	ACA	TGG	CCA	TTT	GGA	ACC	ATC	CTT	TGC	ATA	GTG	ATC	TCC
S	V	N	Y	L	M	G	T	P	F	G	T	I	L	S	K	I	V	I	S
ATA	GAT	TAC	TAT	AAC	ATG	TTC	ACC	ATA	TTC	ACC	CTC	TGC	ACC	ATG	AGT	GTG	GAT	CGA	TAC
I	D	Y	Y	N	M	F	T	I	F	T	L	C	T	M	S	V	D	R	Y
ATT	GCA	GTC	TGC	CAC	CCT	GTC	AAG	AAC	CTC	TAC	TTT	CAG	GGG	CGA	AAT	GCC	AAA	ATT	ATC
I	A	V	C	H	P	V	E	N	L	Y	F	Q	G	R	N	A	K	I	I
AAAT	GTC	TGC	AAC	TGG	ATC	CTC	TCT	TCA	GCC	ATT	CTT	CCT	GTA	ATG	TTT	ATA	GCT	ACA	ACA
N	V	C	N	W	I	L	S	A	I	G	L	P	V	M	F	I	A	T	T
AAAA	TAC	AGG	CAA	GGT	TCC	ATA	GAT	ACA	CTA	ACA	TTC	TCT	CAT	CCA	ACC	TGG	TAC	TGG	GAA
K	Y	R	Q	G	S	I	D	C	T	T	F	S	H	P	T	W	Y	W	E
AN	CTG	CTG	AAG	ATC	TGT	GTT	TTC	ATC	TTC	TTC	ATT	ATG	CCA	GTG	CTC	ATC	ATT	ACC	GTG
CTG	L	L	K	I	C	V	I	F	A	F	I	M	P	V	L	I	I	T	V
TGTC	TAT	GGA	CTG	ATG	ATC	TTG	CGC	CTC	AGT	GTC	CGC	ATG	CTC	TCT	GGC	TCC	AAA	GAA	AAG
C	Y	G	L	M	I	L	R	K	S	V	R	M	L	S	G	S	K	E	K
GAC	AGG	AAT	CTT	CGA	AGG	ATC	AGG	ATG	GTG	CTG	GTG	GTG	GTG	GCT	GTG	TTC	ATC	GTG	TGC
D	R	N	L	R	I	T	R	M	V	L	V	V	V	A	V	F	I	V	C
TGG	ACT	CCC	ATT	CAC	ATT	TAC	GTC	ATT	AAA	GCC	TTG	GTT	ACA	ATC	CCA	GAA	ACT	ACG	TTC
W	T	P	I	H	I	Y	I	I	K	A	L	V	T	I	P	E	T	T	CTC
CAG	ACT	GTT	TCT	TGG	CAC	TTC	TGC	GCT	CTA	GGT	TAC	ACA	AAC	AGC	TGC	CTC	AAC	CCA	GTC
Q	T	V	S	W	H	F	C	A	L	G	Y	T	N	S	C	L	N	P	V
CTT	TAT	GCA	TTT	CTG	GAT	GAA	AAC	TTC	AAA	TGC	TTT	AGA	GAG	TTT	TGT	ATC	CCA	ACC	TCT
L	Y	A	F	L	D	E	N	F	K	C	F	R	E	F	C	I	CCA	T	S
TCC	AAC	ATT	GAG	CAA	CAA	AAC	TCC	ACT	CGA	CGT	CAG	AAC	ACT	AGA	GAC	CAC	CCC	TCC	ACG
S	N	I	E	Q	Q	N	S</												

FIG. 18

